genes) and each gene is < the cause' of some one unit quality of the organism which develops from the egg. The particulate theory in this extreme form was soon replaced by the view that many genes co-operate in the production of each distinguishable feature of the adult, yet (in spite of denials and expostulations from some quarters) many biologists have continued to write of the genes as though they, in virtue of their chemical peculiarities, were the essential active agents in all the constructive or morphogenetic processes. Thus by one leading geneticist it has recently been said that the genes [c] control and direct all those chemical reactions which give rise to all the organs and functions of the body'; that other genes ' organize and determine intellect '.[1]

The influence of genetics in prolonging the life of the mechanical biology has been very great, partly because a long series of brilliant discoveries rapidly resulted from this new method of study, which, accordingly, attracted many of the ablest students; partly also because these discoveries quickly bore practical fruit, in the form of improvements in various breeds of domestic animals and plants. In this respect biology, for the first time in its history, began in a small way to rival physical science, which throughout the nineteenth century had by its discoveries added immensely to its own prestige by increasing greatly the wealth of those nations which knew

[1] I cite from *Heredity and the Ascent of Man,* by C. C. Hurst (1935), where also it is written : * In the light of the gene

we no longer see through a glass darkly ; the old time problems of heredity, variation, sex and species appear as clear as crystal. Experiments have definitely established the fact that the gene is the primary organizer and determiner of all structural and functional characters in living organisms.' T. H. Morgan in 1923 wrote of the genes : ' We must regard the organism in large part as the outcome of the sum total of their activities.'